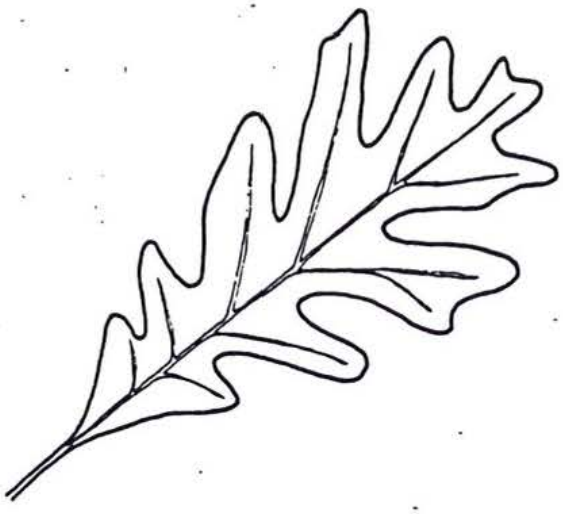
1992
STATE OF IOWA
FOREST HEALTH
CONDITIONS



PREPARED BY THE

FORESTRY DIVISION

IOWA DEPARTMENT OF NATURAL RESOURCES

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1992 IOWA FOREST HEALTH REPORT

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1992 IOWA FOREST HEALTH REPORT

INTRODUCTION

The following is detailed information concerning the health of Iowa's forests and shade trees during October 1, 1991 to September 30, 1992. This 1992 Iowa Forest Health Report will discuss Iowa Forest Geography, 1992 Iowa Weather Conditions, Forest Health Monitoring Methods, Forest Health Results and Comparisons with 1991, and Forest Health Needs for the near future. Special emphasis is given to the latest developments concerning Gypsy Moth in Iowa. For more information contact: John Walkowiak, Urban Forestry/Forest Health Coordinator, Forestry Division, Iowa Department of Natural Resources, Wallace State Office Building, Des Moines, Iowa 50319 (515) 242-5966.

IOWA'S FORESTS

Although known today primarily as an agricultural State, Iowa had about 7 million acres of forest before European settlement, 18% of the land cover in 1850. Iowa's forests were comprised of upland oak-hickory in the drainages and other areas protected naturally from wildlife, while oak savannas (White and Bur Oak) combined with tall grass prairie occurred across much of the western 2/3 of the State. Agricultural clearing dramatically reduced the area of Iowa's forestland to less than 1.5 million acres by 1974. According to the recently completed 1990 Iowa Forest Inventory, there are approximately 2.1 million acres of timberland in the state. This actually represents an increase of over 1/2 million acres since the last forest inventory in 1974. This increase is due to reduced agricultural clearing, significant decrease on livestock cow-calf operations in southern Iowa, and increased tree planting. Today this forest resource exists in scattered parcels and is owned predominantly by private individuals (92%).

Iowa's forests can be categorized into 3 groups, (1) Rural Woodlands, (2) Windbreaks & Shelterbelts, and (3) Urban & Community Trees.

Iowa's rural woodlands make up the majority of the state's forest resources. These woodlands are primarily in the eastern 2/3 of the state, with the largest concentrations along the Mississippi River and along the

Missouri state border. Located on uplands, drainages, and bottomlands too difficult to farm, they are deciduous in nature, represented by oak-hickory, maple-basswood and elm-ash-cottonwood forest types. The 1990 forest inventory indicates a decline in the total percentage of major oak-hickory resource with a corresponding increase in total percentage of maple-basswood and elm-ash-silver maple.

Iowa's windbreaks and shelterbelts are located in the northern and western portions of the state. This windbreak resource protects farmsteads, livestock and crops. Although the amount of acreage in windbreaks is a small portion of the state's forest resource, these man-made plantings are often the only forest cover available in these areas.

The trees along the streets and in city parks cover approximately 40% of the land surface of the typical Iowa community. In Iowa, this urban or community forest is now receiving substantial recognition as a valuable resource. According to a 1990, 22 Iowa city survey the most dominate species are green ash, sugar maple-Norway maple and silver maple. These three species often total over 60% of the urban forest resource in the typical Iowa community.

1992 IOWA WEATHER CONDITIONS

Weather in Iowa has had major impacts on the health of Iowa's forest resources, and 1992 was no different. The early Fall of 1991 had above normal precipitation and temperatures, but ended quite suddenly on October 30-31st as temperatures dropped significantly (20-35 degrees over a 24 hour period). On the coldest nights, November 7-8. lows ranged from 4 degree above zero in the extreme southeast to 16 below zero in west central Iowa. What was exceptional about this cold was that it struck so early that many trees had not fully entered into a dormant state - causing wide spread freeze damage. In addition to the extreme cold temperatures, freezing rain and major ice storms struck much of the western 2/3 of the state, causing major limb breakage of forest and urban trees. When winter officially arrived it brought normal snowfall and periods of moderate cold temperatures (< 32 F). The spring for most of Iowa had cool temperatures and above normal precipitation. Flooding problems were common in southern and central regions of the state. But beginning in May, most of the state entered a six to eight week droughty period of high temperatures (>80 F) and little to no precipitation. Most trees possessed a large of amount of foliage and were stressed during this droughty

time. Around July 1st, cool temperatures and above normal precipitation returned statewide right through the end of September of 1992.

1992 IOWA FOREST HEALTH MONITORING METHODS

During 1992 seven forest health monitoring methods were used in Iowa: (1) DNR Urban Forester ice damage visual & mail surveys, (2) aerial sketch mapping, (3) Area & District DNR Forester visual reports, (4) Municipal Forester/Arborist visual reports, (5) Iowa Christmas tree growers visual reports, (6) State Entomologist's Gypsy Moth trapping, and (7) Marshalltown aerial video/photo urban forest health project.

After the initial ice storms during the Week of October 30, 1991 through November 7, 1991, the DNR Urban/Forest Health Forester at the request of the Iowa State Office of Disaster Services prepared a quick assessment of ice storm damage to urban trees. This assessment involved mapping out the damaged areas through field visits and phone contacts with municipal employees involved with tree care. This report was submitted within 24 hours of the request to the Office of Disaster Services and accompanied Iowa reports to the Federal Emergency Management Administration (FEMA) as documentation for disaster relief assistance. In addition, at the request of several members of the Iowa Christmas Tree Growers Association (ICTGA), a mail survey was mailed along with their December, 1991 news letter to document the extend of winter injury to the Iowa Christmas tree crop and economic impacts. A total of 77 growers statewide responded.

From July 20 to 27, 1992 a statewide aerial sketch mapping survey was conducted for the 14th straight year by the Forestry Division. Utilizing a light aircraft, predetermined flight lines were prepared of the largest concentrations of forestland in the five regions of the state: central, southeastern, western, northeastern and eastern Iowa. Flying at an elevation of 1,000 feet above ground, areas of discoloration or defoliation were marked on 7 1/2 minute USGS topographic quad maps by two visual observers. These suspected sites were then ground checked by the Area Foresters of the Forestry Division during August and September, 1992. The following sites were surveyed (Figure 1)

Stephens State Forest	Shimek State Forest Lacey-
Lacey-Keosauqua State Park	Loess Hills State Forest
Preparation Canyon State Park	Waubonsie State Park

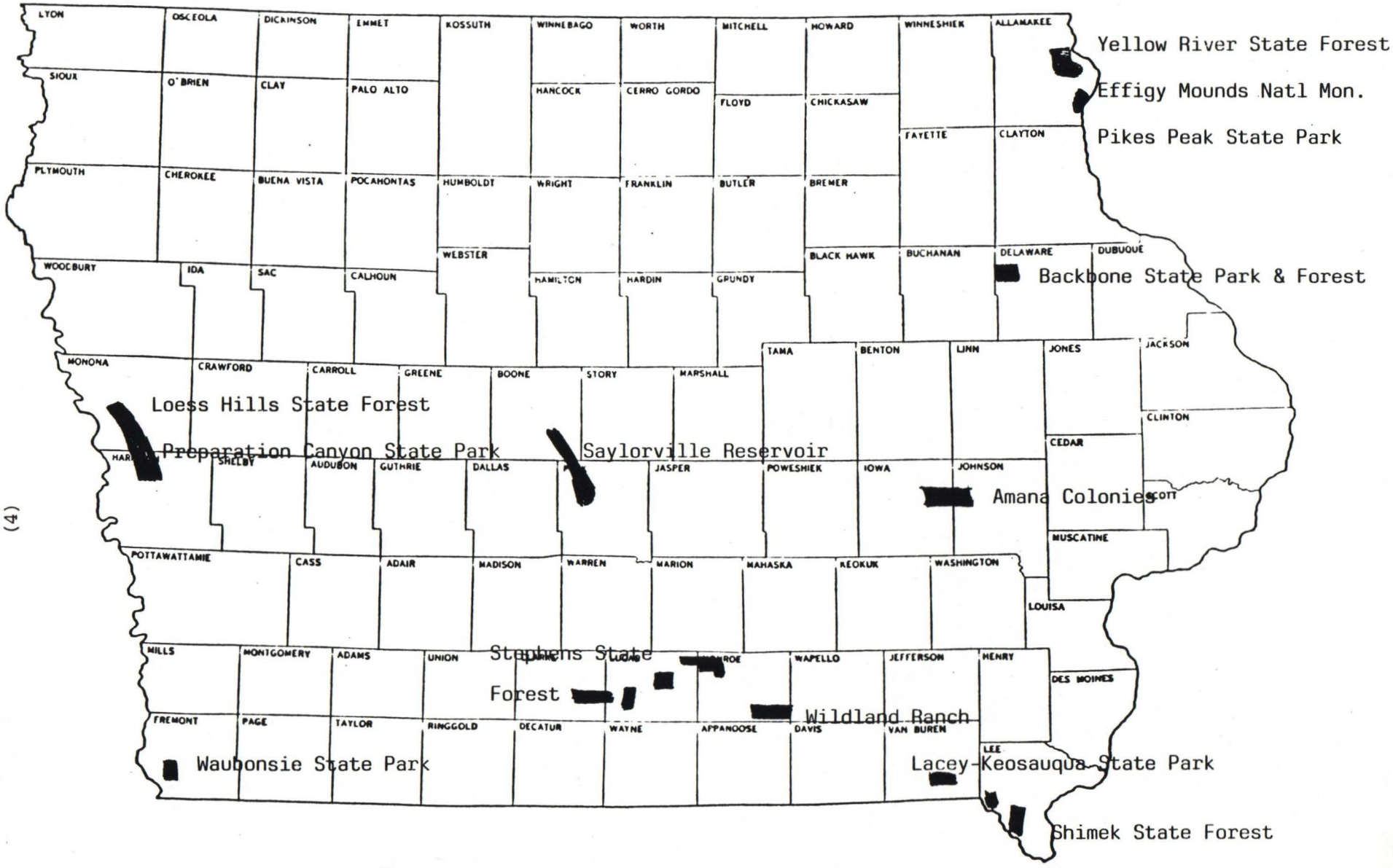


FIGURE 1: 1992 IOWA FOREST HEALTH AERIAL SURVEY SITES

Yellow River State Forest	Pikes Pike State Park
Backbone State Park	Backbone State Forest
Amana Colonies	Saylorville Reservoir
Effigy Mounds Natl Monument	Wildland Ranch

This aerial and ground checked survey involved approximately 64,928 acres or a 3.1% sample of Iowa's total forest resource.

The third method forest health surveying method involved visual inspection reports by the Forestry Division's 12 district service foresters and 4 area state foresters (Figure 2 & 3). A report form was submitted by district & area foresters at the end of July and end of August representing forest health problems of woodlands and windbreaks. Information was then tabulated by service & area forestry district and for the state.

The fourth monitoring method utilized visual inspections by 9 city foresters and the Forestry Division's urban forestry coordinator of 11 communities statewide. The 11 cities were selected to expand the visual survey to include urban areas and to utilize the talents of the 9 full-time and part-time city foresters/arborists. The following communities were surveyed: (See Figure 4)

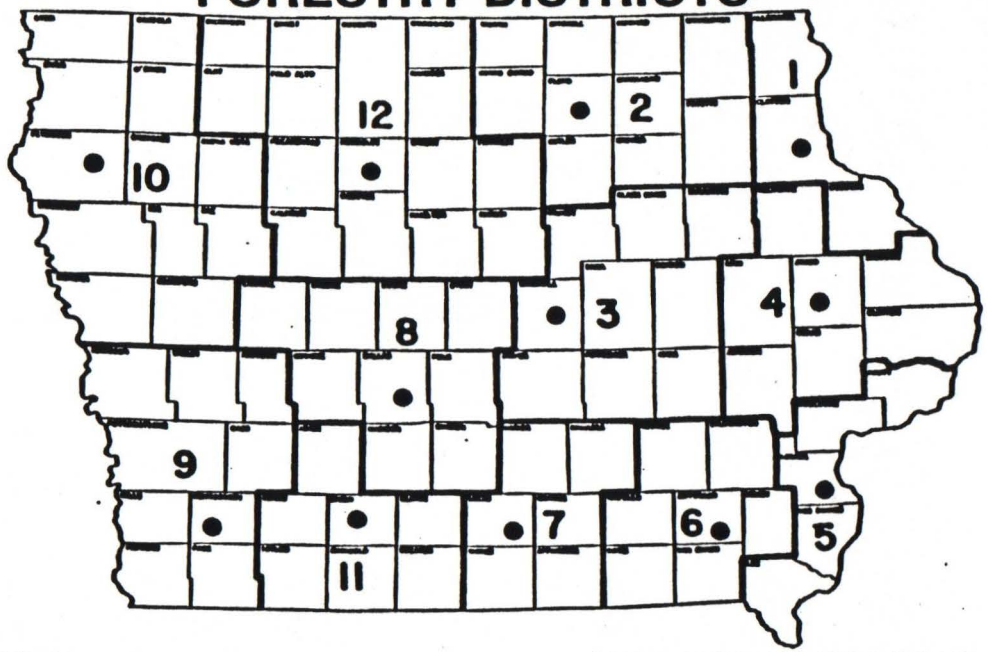
Davenport	Fort Dodge	West Des Moines
Cedar Rapids	Dubuque	Sioux City
Waterloo	Burlington	Ottumwa
Des Moines	Council Bluffs	

A report form was submitted by participating foresters at the end of August representing forest health problems of urban and community trees. Results were then tabulated by community and for the state.

The fifth monitoring method utilized visual inspections by 19 active and knowledgeable Christmas tree growers across the state. Growers were selected by representatives of the Iowa Christmas Tree Growers Association (ICTGA) as knowledgeable about regional Christmas tree health problems and needs (see Figure 5).

For approximately the 11th year, an intensive Gypsy Moth trapping program was coordinated by the State Entomologist from the Iowa Department of Agriculture and Land Stewardship (IDALS) with assistance from USDA Animal, Plant Health Inspection Service (APHIS), DNR, Corps of Engineers and

FORESTRY DISTRICTS



DISTRICT FORESTERS

for forestry assistance, contact the forester for your county

Distirct 1 - Janet Ott - 319/245-1891 - Box 662, Elkader 52043

District 2 - Gary Beyer - 515/228-6611 - Box 4, Charles City 50616

District 3 - Bob Hibbe - 515/752-3352 - Box 681, Marshalltown 50158

District 4 - Steve Swinconoe - 319/462-2768 - Box 46, Anamosa 52205

District 5 - Stan Tate - 319/523-8319 - 515 Townsend Ave, Wapello 52653

District 6 - Ray Lehn - 515/472-2370 - Box 568 - Fairfield 52556

District 7 - Duane Bedford - 515/774-8733 - RR5 Box 119AA, Charlton 50049

District 8 - George Warford - 515/993-4133 - 1918 Greene St, Adel 50003

District 9 - Brent Olson - 712/546-5161 - Box 152, Red Oak 51566

Distirct 10 Joe Schwartz - 712/546-5161 - 1100A 12 St SW, LeMars 51031

District 11 Randy Goerndt - 515/782-6761 - 500 E Talyor, Creston 50801

District 12 Gail Kantak - 515/332-2761 - 102 Eighth St S, Humboldt 50548

STAFF FORESTERS

STATE NURSERY, 2404 SOUTH DUFF, AMES 50010

PHONE 515/233-1161

Jerry Gerbasch, Nursery Manager

Roger Jacobs, Assistant Nursery Manager

Jerry Kemperman, Forestry Services Supervisor

John Tibbon, Fire Protection Forester

Denny Michael, Rural Development Forester

STATE NURSERY, Route 1 Box 307A Montrose 52639

Bruce Blair, Assistant Nursery Manager 3129/463-7167

FORESTRY/IOWA DNR, Wallace Bldg, Des Moines 30319

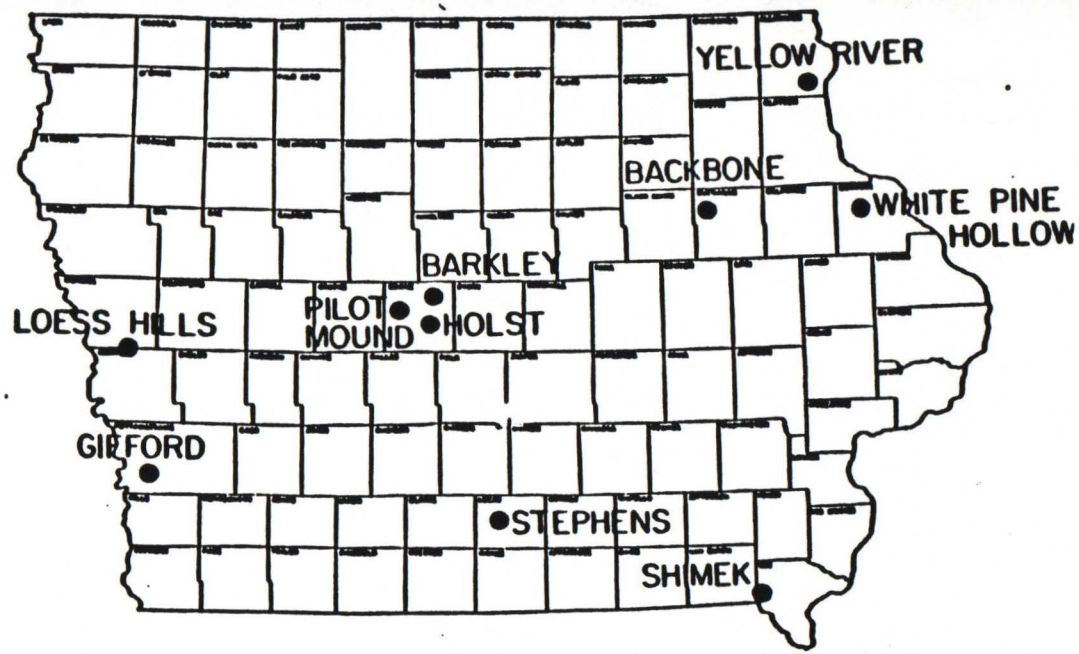
William Farris, State Forester - 515/281-5145

Mike Brandrup,Services Bureau Chief -515/281-8657

Jim Bulman, Forests Bureau Chief - 515/281-5441

John Walkowiak, Urban Forester -515/242-5966

FIGURE 2: DISTRICT FORESTERS INVOLVED IN FOREST HEALTH SURVEYS 1992



SHIMEK STATE FOREST - Wayne Fuhlbrugge, Area Forester, Farmington 52626, 319/878-3811. this 8,792 acre forest is 20 miles west of Ft Madison in Lee and Van Buren Counties. It offers hunting, hiking, camping, fishing, and horseback riding.

HOLST STATE FORESTS - Located 12 miles northwest of Boone in Boone County, it contains 314 acres

PILOT MOUND AREA - Located 1/2 mile south of Pilot Mound in Boone County, this area contains 34 acres

STEPHENS STATE FOREST - Randy Cook, Area Forester, Route 3, Chariton, 50049 515/774-4559. Located in Lucas, Monroe, Appanoose and Davis Counties. This 10,236 acre forest offers camping, hunting, horseback riding. hiking and fishing.

GIFFORD FOREST AREA - 1 mile south of Council Bluffs, is representative of the bottonland forests of the Missouri River Valley, it contains 40 acres.

YELLOW RIVER STATE FOREST - Bob Honeywell, Area Forester, Rte 1 Box 73 Harpers Ferry 52146 319/586-2254. Located 10 miles north of McGregor in Allamakee County, this 7,889 acre forest offers hiking, cross -country skiing, fishing, hunting, snowmobiling, camping, and picnicing.

BACKBONE STATE FOREST - Located 4 miles southwest Strawberry Point in Delaware County. This area consists of 186 acres of pine plantations and native forests.

LOESS HILL STATE FOREST - Brent Olson, Area Forester, P.O. Box 158 Pisgah 51564 712/456-2915. In the process of being aquired, this major state forest in Harrison and Monona Counties will be about 18,000 acres in size and will offer hiking, fishing, hunting and camping. Now 6,517 acres.

BARKLEY STATE FOREST - Located 2 miles east of Fraser, total 40 acres.

WHITE PINE HOLLOW - Located 2 miles west and 1 mile north of Luxemburg in Dubuque county, contains 712 state preserve and 198 acres of state forest.

FIGURE 3: AREA FORESTERS INVOLVED IN FOREST HEALTH SURVEYS

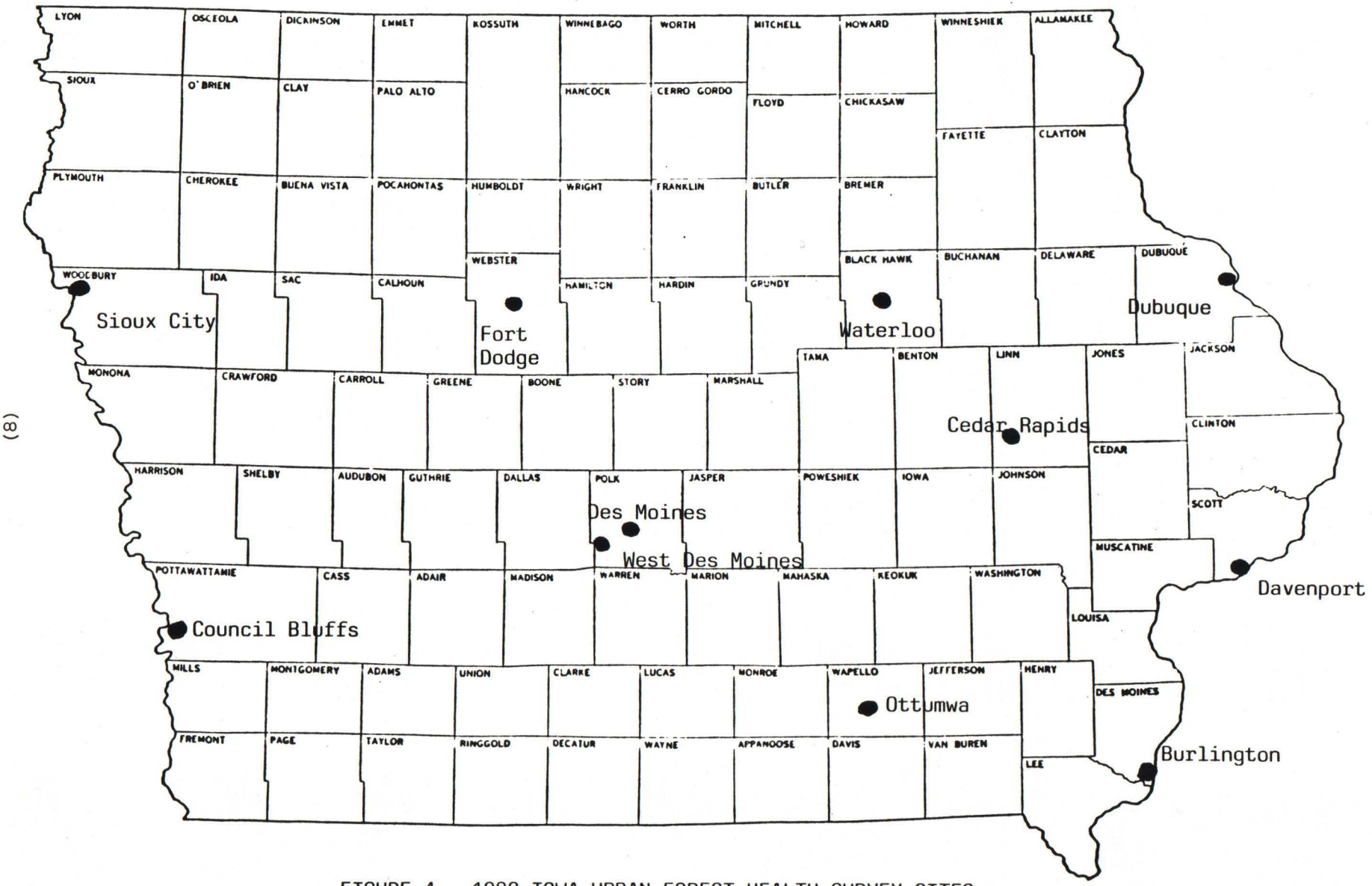


FIGURE 4: 1992 IOWA URBAN FOREST HEALTH SURVEY SITES

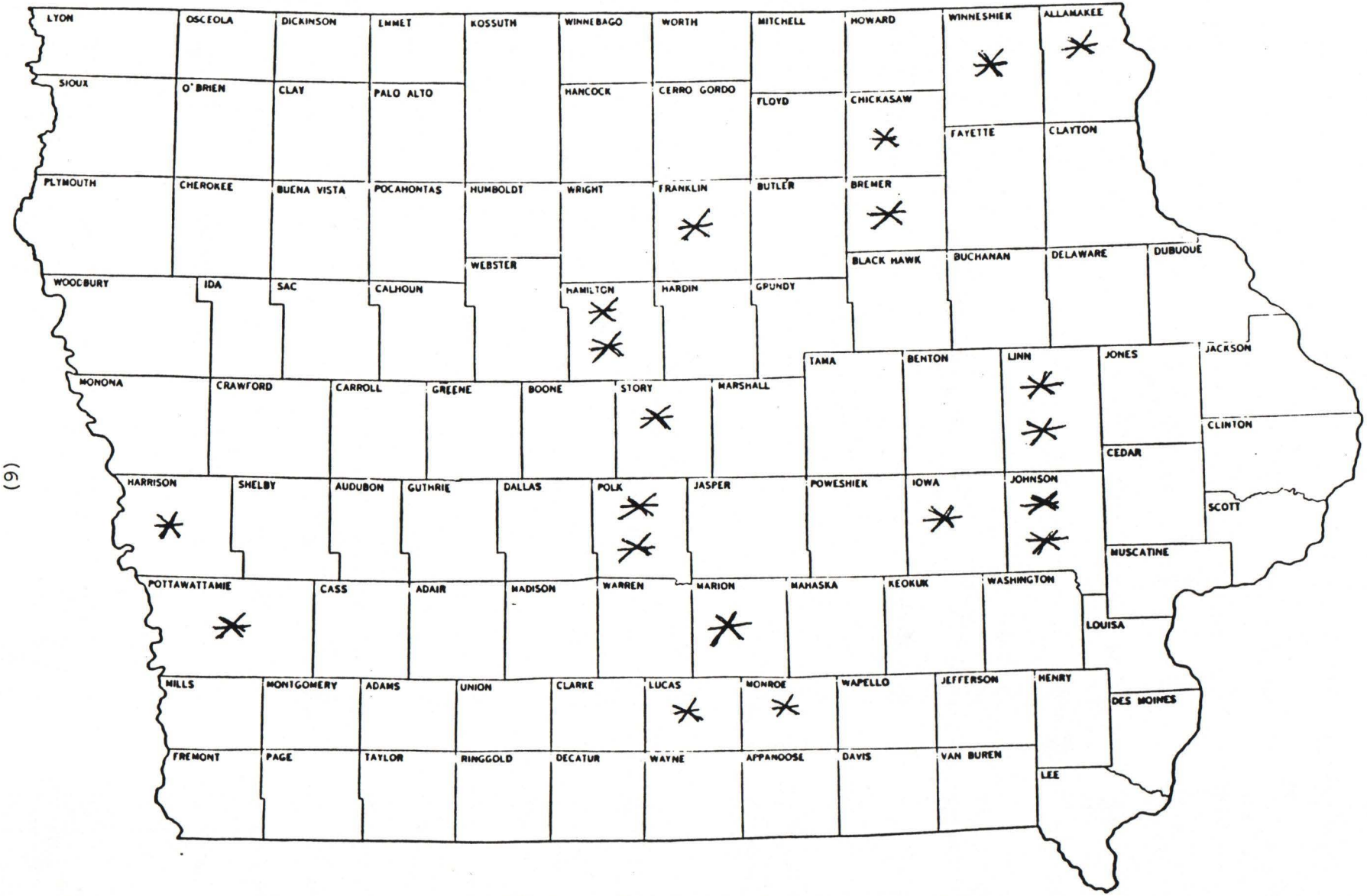


FIGURE 5: 1992 IOWA FOREST HEALTH CHRISTMAS TREE VISUAL SITES

several County Conservation Boards. Utilizing sticky traps that possess female scent pheromones, a total of 4,769 traps were placed in all 99 Iowa counties during the summer of 1992, with nearly one-fourth of the traps being set in Polk and Cerro Gordo Counties. All traps were in place by July 1st and were removed by August 30th.

The final monitoring method employed involved a test of the feasibility of aerial videography for monitoring forest health in both urban and forest situations. In a cooperative effort between the DNR and the USDA Forest Service, North Central Forest Health Monitoring Unit, a demonstration area of the City of Marshalltown, Marshall County, Iowa (25,000 in population) was chosen for this project. Both videographic and aerial photography was used by USDA Forest Service during August 10-12, 1992, with ground checks involving the DNR and the City of Marshalltown being completed during the first week of September, 1992. Results of this trial effort will be completed by February, 1993.

IOWA FOREST HEALTH SURVEY RESULTS

Survey results will be reported for each method utilized: Ice Storm Damage Survey, Freeze Damage Survey, Aerial Sketch Mapping, Visual Reports, and Gypsy Moth Trapping; amount of acres affected (sketch mapping only), state extrapolations, and comparisons with 1991 Forest Health Report.

ICE STORM DAMAGE SURVEY:

Although freezing precipitation fell over much of the western two-thirds of the State from October 30 - November 7, 1991 accompanied by extreme cold temperatures and high winds, two areas of Iowa received significant ice accumulation and tree damage, South-Western and North-Central. Approximately 70 communities in 20+ Iowa counties were significantly affected and range in size from Silver City, Mills County (300 residents) to Fort Dodge, Webster City (30,000 residents).

The tree damage ranged from minor limb breakage, trunk splitting, severely broken tree tops to total tree destruction. From visual observations, Ice damage was more significant on urban trees then woodland trees due to 2 factors: (1) larger surface area for ice accumulation and (2) wider tree spacing offering less protection. Ice damage in the communities occurred most often on softer wooded species,

such as Silver Maple, Siberian Elm and Poplars. However, where ice damage was severe all species of urban trees received damage. Figure 6 and Table I shows the ice damage to trees by county, as either Severe, Moderate to Severe, Moderate and No Damage. These categories are defined below:

SEVERE - 80% of community trees damaged
MODERATE TO SEVERE - 40 to 80% of community trees damaged
MODERATE - 10 to 40% of community trees damaged
NO DAMAGE - < 10% of community trees damaged

Based on past experience with urban/community tree inventory work, the typical Iowa community possesses 1 community tree for every two to three residents. Using the 1990 Iowa Census for the affected communities Table I was developed to assess the approximate numbers of community trees damaged by ice accumulation:

TABLE I IOWA FALL 1991 ICE STORM DAMAGE TO URBAN TREES

INJURY RATING	# PUBLIC TREE DAMAGED	REPAIR COSTS*
SEVERE	5,000	$1,250,000.00
MODERATE TO SEVERE	10,000	$1,000,000.00
MODERATE	7,500	$375,000.00
TOTALS	22,500	$2,500,000.00

* Repair costs based on:

Severe - min. $250.00 per tree or replacement
Moderate to Severe - min. $100.00 per tree repair
Moderate - min. $50.00 per tree repair

This information was supplied to the Iowa Office of Disaster Services and was part of Iowa's Request for Federal Disaster Assistance to FEMA. Communities who received severe, and moderate to severe tree damage, informed the FEMA field representatives of the need to clean up and repair storm damaged trees, remove hazardous branches and trees and the number of trees to replant. FEMA appropriated over $500,000 in the Spring of 1992 to Iowa to reimburse communities for clean up and repair storm damage of publicly owned community trees.

FREEZE DAMAGE SURVEY OF CHRISTMAS TREES:

Per a request of the Iowa Christmas Tree Growers

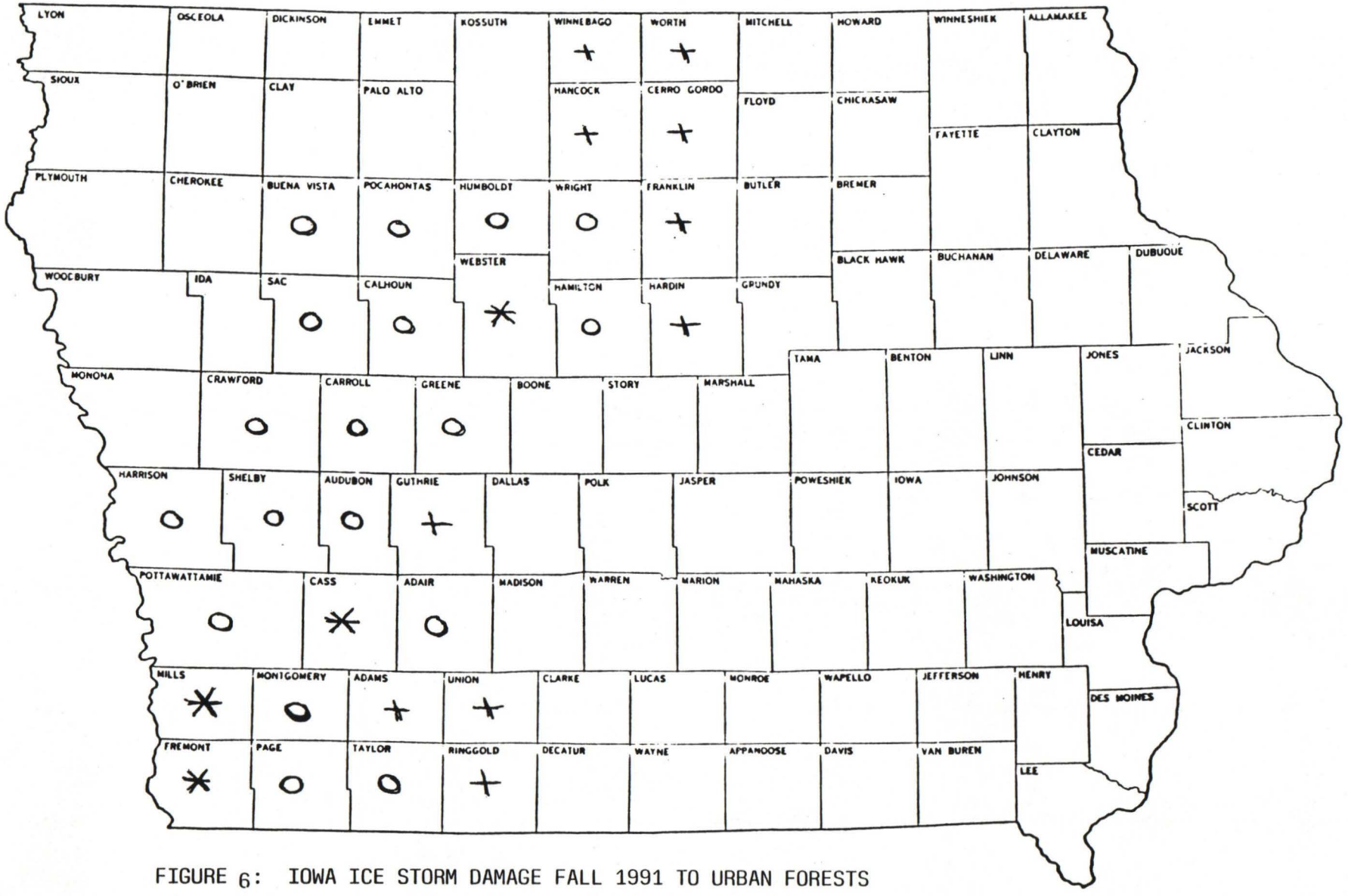


FIGURE 6: IOWA ICE STORM DAMAGE FALL 1991 TO URBAN FORESTS

* SEVERE
O MODERATE TO SEVERE
\+ MODERATE

Association (ICTGA) concerning the severe browning of Christmas trees as a result of the sudden temperature change during early November, 1991, the DNR conducted a joint mail survey to document damage. A Mail survey (Attachment I) was inserted in the December, 1991 issue of the ICTGA News Letter. A total of 77 out of 183 active growers statewide replied (42% response rate) involving a total of 1,163 acres, note: growers were asked only to reply if they had freeze damage to their Christmas trees.

Survey results indicate that the locations of the freeze damage to Christmas trees (see Figure 7) had a scattered distribution, yet where no ice cover existed Christmas trees in Eastern and Southern Iowa received the most significant freeze damage. Species damaged included Scotch Pine (78%), short-needed cultivars; White Pine (12%); and other species (10%). Visual symptoms included partial to complete browning of their foliage. All tree sizes were affected. Attempts to paint trees for marketability purposes were unsuccessful. Yet according to most of the growers, tree branches remained green under the bark and the majority of buds seemed viable. Fifty percent of the growers estimated that the damaged trees would survive, but would require 2 to 3 additional years of growth and effort to return to marketable form. According to ISU Extension Plant Pathologist, Mark Gleason, the trees had not harden off enough to prevent cell rupture and foliage discoloration. Surveyed Iowa Christmas tree growers reported losses of approximately $53,732 in wholesale Christmas tree value in 1991 due to freeze damage.

AERIAL SKETCH MAPPING:

Results of the aerial sketch mapping are listed by specific sites and compare forest health problems of 1991 and 1992.

Stephens State Forest
Total acres = 10,236 ac.

1991	**1992**
Oak Wilt - 40 ac.	Oak Wilt - 85 ac.
Dutch Elm Disease - 12 ac.	Dutch Elm Disease - 25 ac.
Red Pine Decline - 6 ac.	Red Pine Decline - 10 ac.
Two-lined Borer - 3 ac.	Two-lined Borer - 6 ac.
Jack Pine Decline - 3 ac.	Jack Pine Decline - 15 ac.
	White Pine Decline - 2 ac.
	Pine Nematode - 2 ac.
	Green Ash Decline - 2 ac.

ATTACHMENT I

IOWA CHRISTMAS TREE FALL 1991 WEATHER DAMAGE SURVEY

The sever cold snap that occurred in Iowa during early November has reportedly damaged many Christams trees and ornamental evergreens across the State. Typically, the damage was a browning of the foliage similar to "Winter Burn" symptons seen usually in the Spring. What this survey hopes to do is to quantify how severe the damage was regionally and statewide, determine what species were most susceptable and determine the value lost. Results in next news letter. Would you please fill out the brief survey belwo and return it by January 6th to:

John Walkowiak
Forestry Division/ Iowa DNR
Wallace State Office Bldg
Des Moines, Iowa 50319

1. WHAT COUNTY IS YOUR CHRISTMAS TREE FARM LOCATED?

2. HOW MANY ACRES OF CHRISTMAS TREES DO YOU MANAGE?

3. WHERE DO YOU BUY YOUR CHRISTMAS TREE PLANTING STOCK?

   State Nursery___ Iowa Private___ Out of State___

4. WOULD YOU RATE YOUR CHRISTMAS TREE WEATHER DAMAGE AS:

Severe____	Moderate____	Minor____	No Damage____
>25% of trees	10-25% of trees	<10% of trees	

5. WHAT SPECIES OF TREES WERE DAMAGED?

   Scotch___ White Pine___ Others (Specify Species)___

6. WHAT SIZE OF TREES WERE DAMAGED?

   8 ft +___ 5-7 ft___ 3-4 ft___ <3 ft___

7. DO YOU BELIEVE DAMAGED TREES AREA SALVABLE?

   YES_____ NO_____

8. CAN YOU ESTIMATE THE MONETARY VALUE LOST?

   $1,000 +___ $500 - $1,000___ $100 - $500___ <$100___

THANK YOU FOR YOUR TIME

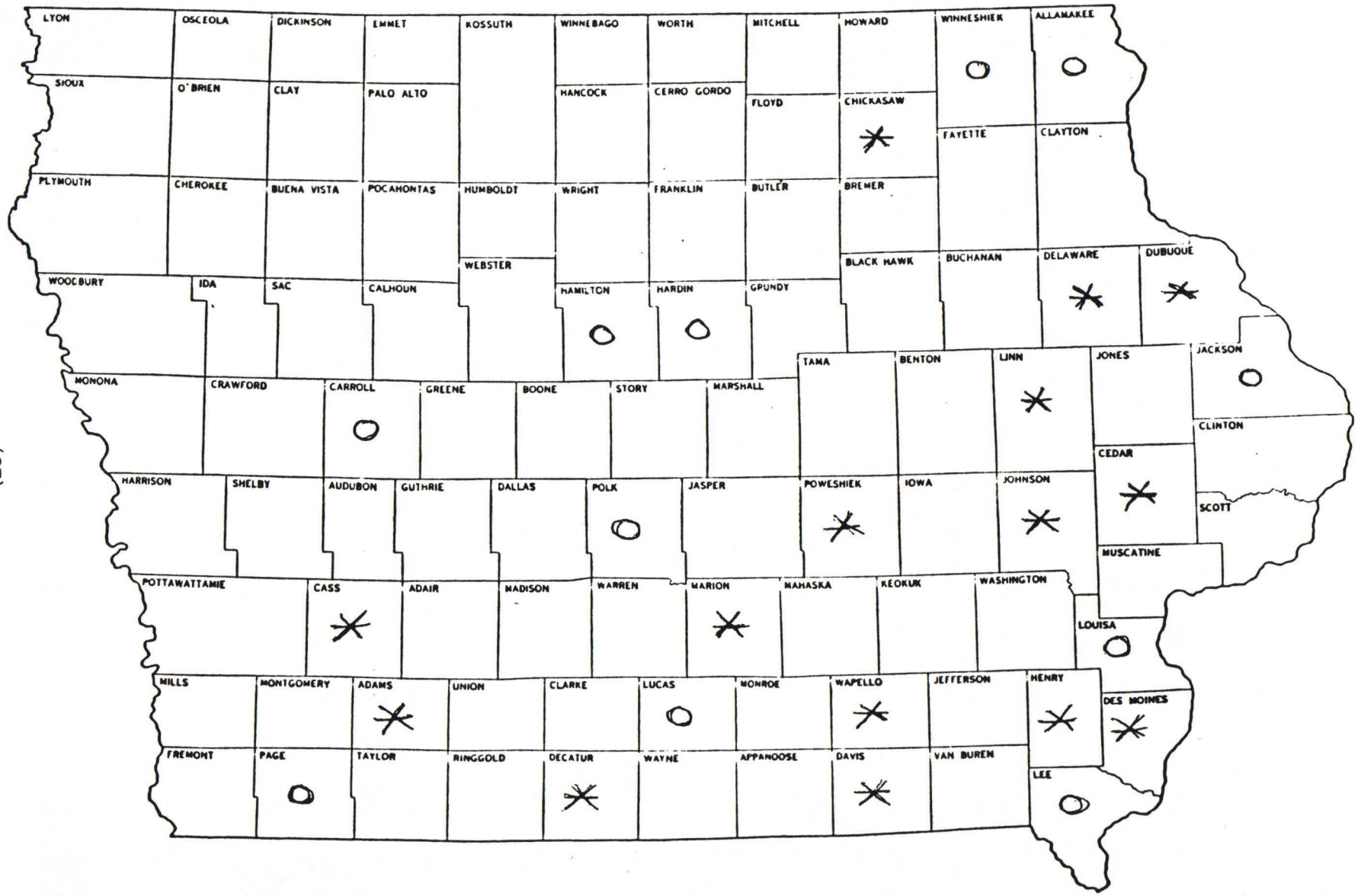


FIGURE 7: 1991 IOWA CHRISTMAS TREE FALL FREEZING DAMAGE

✳ SEVERE BROWNING TO FOLIAGE

O MODERATE TO SEVERE BROWNING OF FOLIAGE

Shimek State Forest
Total acres = 8,792 acres

1991	1992
Oak Wilt/Decline - 56 ac.	Oak Wilt/Decline - 62 ac.
Dutch Elm Disease - 12 ac.	Dutch Elm Disease - 3 ac.
Pine Nematode - 3 ac.	Pine Nematode - 7 ac.
Red Pine Decline - 12 ac.	Red Pine Decline - 18 ac.
Jack Pine Decline - 3 ac.	Jack Pine Decline - 6 ac.
White Pine Decline - 1 ac.	Hickory Decline - 2 ac.

Lacey-Keosauqua State Park
Total acres = 1,687 ac.

1991	1992
Oak Wilt/Decline - 60 ac.	Oak Wilt/Decline - 83 ac.
	White Pine Decline - 6 ac.
	Dutch Elm Disease - 6 ac.
	Black Locust Borer - 6 ac.

Loess Hills State Forest
Total acres = 6,597 ac.

1991	1992
Oak Wilt - 5 ac.	Oak Wilt - 5 ac.
Dutch Elm Disease - 6 ac.	Dutch Elm Disease - 6 ac.
Fire (Redcedar) - 18 ac.	Fire (Redcedar) - 18 ac.
Herbicide - 6 ac.	Herbicide - 7 ac.

Preparation Canyon State Park
Total acres = 344 ac.

1991	1992
Dutch Elm Disease - 2 ac.	Dutch Elm Disease - 2 ac.

Waubonsie State Park
Total acres = 1,247

1991	1992
Oak Wilt - 18 ac.	Oak Wilt - 19 ac.
Dutch Elm Disease - 4 ac.	Dutch Elm Disease - 7 ac.
Ash Decline - 6 ac.	Ash Decline - 7 ac.

Yellow River State Forest
Total acres = 7,889 ac.

1991	1992
Oak Wilt - 70 ac.	Oak Wilt - 8 ac.

Austrian Pine Decline - 3 ac. Austrian Pine Decline - 3 ac.

Pikes Peak State Park
Total acres = 970 ac.

1991	1992
Oak Wilt - 5 ac.	Oak Wilt - 6 ac.

Effigy Mounds National Monument
Total acres = 1,100 ac.

1991	1992
Not Surveyed	Oak Wilt - 6 ac.

Backbone State Park
Total acres = 1,780 ac.

1991	1992
Oak Wilt - 2 ac.	Oak Wilt - 3 ac.
Two-lined Borer - 1 ac.	Two-lined Borer - 3 ac.

Backbone State Forest
Total acres = 186 ac.

1991	1992
Oak Wilt - 10 ac.	Oak Wilt - 11 ac.

Amana Colonies
Total acres = 10,000 ac.

1991	1992
Oak Wilt - 10 ac.	Oak Wilt - 4 ac.
Flood Damage - 15 ac.	Flood Damage - 0 ac.
	Dutch Elm Disease - 2 ac.
	Hickory Decline - 2 ac.

Saylorville Reservoir
Total acres = 11,600 ac.

1991	1992
Not Surveyed	Oak Wilt - 2 ac.
	Dutch Elm Disease - 4 ac.
	Flood Damage - 3 ac.

Wildland Ranch
Total acres = 2,500 ac.

1991	1992
Not Surveyed	Two-lined Borer - 4 ac. Oak Wilt - 4 ac.

The sites chosen for the aerial survey are believed to be representative of the rural woodlands of Iowa, therefore utilizing simple extrapolation of this 3.1% sample the information below would be an estimate of total number of acres affected with forest health problems in Iowa within 95% confidence limits during 1991 and 1992:

TABLE II 1991 & 1992 IOWA FOREST HEALTH TOTAL ACRES DAMAGED

Forest Health Problem	1991 Acres	1992 Acres
Oak Wilt/Decline	10,478 ± 6622	9,646 ± 3669
Dutch Elm Disease	1,217 ± 760	1,779 ± 784
Red Pine Decline	130 ± 486	906 ± 629
Two-lined Chesnt Borer	652 ± 402	424 ± 878
Pine Nematode	130 ± 78	291 ± 285
Jack Pine Decline	43 ± 347	679 ± 543
White Pine Decline	43 ± 347	324 ± 190
Fire	782 ± 472	582 ± 571
Herbicide	260 ± 164	226 ± 231
Ash Decline	260 ± 164	291 ± 240
Black Locust Borer	Not Reported	194 ± 190
Flood Damage	435 ± 262	98 ± 95
Hickory Decline	Not Reported	130 ± 63
Austrian Pine Decline	Not Reported	98 ± 95
Construction Damage	Not Reported	65 ± 63
Cottonwood Leaf Spot	435 ± 262	Not Reported
Total	14,865 ± 9361	15,733 ± 8526

Comparison of Iowa Forest Health Conditions in 1991 and 1992 indicate that Oak Wilt is still the current number one threat to Iowa's Forests. Although a decline in infected Oak Wilt acres was reported, it was not significant. Improved silvicultural management is needed to prevent further spread on state and private areas across the state. Significant increase in Dutch Elm Disease, Jack Pine and Red Pine Decline occurred in 1992, probably favored by humid conditions during the growing seasons in both 1991 and 1992, brood trees standing and ice storm damage. Sanitation and stand

conversion to other favored native species of these infested areas appears to be the best solutions available.

AREA & DISTRICT FORESTER VISUAL REPORTS:

From the visual inspection reports sent in by all 15 DNR area and district foresters at the end of July and August a total of 31 different forest health problems were observed. The most significant forest health problems observed are

TABLE III DNR FORESTER 1992 VISUAL FOREST HEALTH REPORTS

Forest Health Problem Observed	Comments
Oak Wilt/Decline	Heavy in all Districts
Dutch Elm Disease	Heavy in all Districts
Freeze Damage	Moderate in all Districts
Two-lined Chestnut Borer	Moderate in N. Central IA
Drought	Moderate in So. IA
Pine Sawfly	Light in all Districts
Dipolda Tip Blight	Moderate in all Districts
Herbicide Drift	Heavy in District 3
Aphids & Plant Bugs	Moderate N. IA
Ash Decline	Moderate in N. & E. IA
Needlecasts	Heavy in Cent. IA

URBAN FORESTERS/ARBORISTS VISUAL REPORTS:

From the visual reports sent in by 9 city urban foresters/arborist and 2 completed by the Forestry Division's urban forestry coordinator at the end of August, 33 forest health problems were observed in these selected urban areas. Urban forest health problems were not measured in acres, since diagnoses involves individual trees. The most significant urban forest health problems observed were: (Refer to Table IV and Figure 4)

TABLE IV 1992 URBAN FORESTER VISUAL FOREST HEALTH REPORTS

Urban Forest Health Problems	Comments
Dutch Elm Disease	Heavy in all areas
Aphids & Plant Bugs	Moderate in all areas
Freeze Damage	Moderate in all areas
Elm Leaf Beetle	Heavy in all areas
Oak Wilt	Moderate in most areas
Verticillium Wilt	Heavy in many areas
Cytospora canker	Moderate in E. IA

Environmental Stress	Moderate in most areas
Hard Maple Decline	Moderate in most areas
Ash Decline	Moderate in all areas
Dipolda Tip Blight	Moderate in Cent & E. IA

IOWA CHRISTMAS TREE GROWERS VISUAL SURVEYS:

From the visual reports sent in by 19 active members of the Iowa Christmas Tree Growers Association at the end of August, 15 tree health problems were observed in these selected Christmas tree farms. The most significant Christmas tree health problems observed were (refer to Table V and Figure 5):

TABLE V 1992 VISUAL CHRISTMAS TREE GROWER VISUAL REPORTS

Christmas Tree Health Problem	Comments
Freeze Damage to Scotch Pine	Moderate statewide
Drought damage to pines & firs	Moderate statewide
Sawflys to Scotch Pine	Moderate statewide
Needle Blight to Pines	Light statewide
Scale	Moderate statewide
Deer Browse to Pines	Moderate statewide
Rabbit Damage	Heavy statewide
Weevils to White Pine	Light in W. & S. IA
Red Wing Blackbird	Moderate in S. IA
Gopher damage to Pines	Light in E. IA

GYPSY MOTH TRAPPING RESULTS:

At the close of the 1992 summer season, the following information was documented regarding the Gypsy Moth in Iowa by the State Entomologist of the Iowa Department of Agriculture and Land Stewardship. A total of 162 male Gypsy Moths were recovered from 41 traps in 10 counties (See Figure 8). Of the 162 male moths caught, all but 13 could be traced to infested Blue Spruce nursery stock shipped illegally into Iowa retail locations in Des Moines (Polk County) and Clear Lake (Cerro Gordo County) last year.

Two small infestations (12 to 15 acres total) have been eradicated by the State Entomologist staff in Long Grove (Scott County) and near Mason City (Cerro Gordo County) in the Spring-Summer of 1992 with two ground applications of Bt., a microbial insecticide. The infestation in Long Grove was the result of one homeowner moving to Iowa from New Jersey in 1989. The infestation near Mason City occurred in

1992 GYPSY MOTH INFESTED COUNTIES

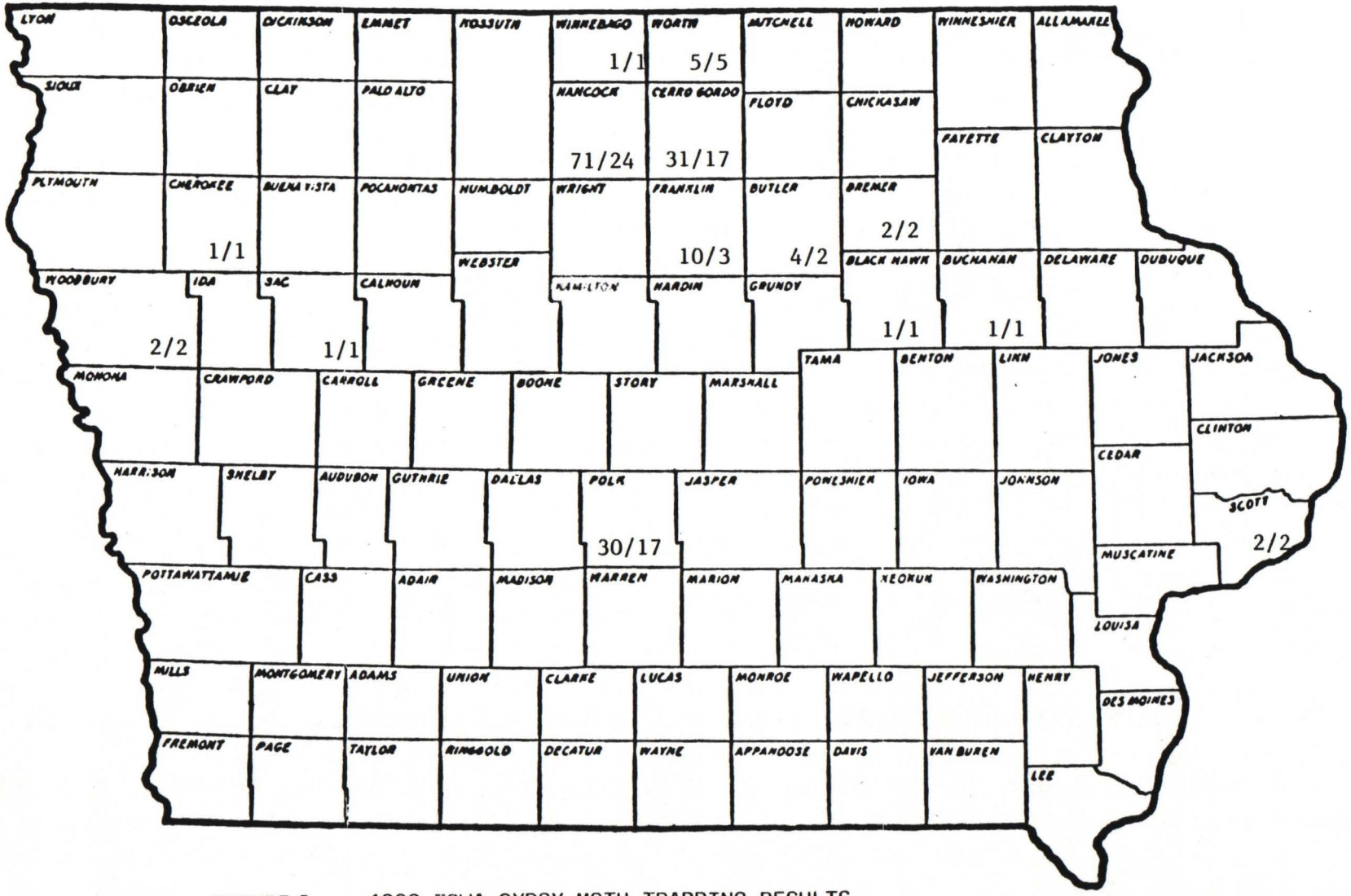


FIGURE 8 : 1992 IOWA GYPSY MOTH TRAPPING RESULTS

a recently established farmstead windbreak utilizing the infested Blue Spruce nursery stock.

Locations in Hanlontown (Worth County), Rock Falls and Thornton (Cerro Gordo County), Alexander (Franklin), Clarksville (Butler County), Duncan and Garner (Hancock County) and Des Moines (Polk County) are all results of 1991 infested nursery stock plantings and are being considered for treatment with Bt. using ground or aerial applications for 1993 by the State Entomologist Office (IDALS).

Gypsy Moth monitoring program for 1993 will continue at similar or expanded levels depending upon state budget and staffing levels within the Iowa State Entomologist Office (IDALS). Assistance from federal and other state agencies, including the DNR and local governments will be available upon request from the State Entomologist.

One cooperative expansion of the Iowa Gypsy Moth Program, was the production and distribution of a Iowa Gypsy Moth publication, "Learn To Know the Gypsy Moth". This three fold publication was funded by the IDALS, Entomology Section; ISU Extension Entomology; and DNR, Forestry Division. Over 10,000 copies were initially distributed, with a second printing completed in October, 1992.

IOWA FOREST HEALTH NEEDS

State agencies and public universities continue to experienced significant budget and staff limitations as forest health needs continue to be identified in woodland, urban and Christmas tree areas across the state. Therefore, forest health efforts in Iowa need to continue to improve interagency cooperation, expanded partnerships, maintenance of monitoring efforts and application of pest management controls. The Gypsy Moth continues to be the biggest challenge facing Iowa forests in the future, but efforts need to continue to expand the silvicultural management of currently identified forest health problems, such as Oak Wilt and Ash Decline respectively . This report recommends the following objectives be accomplished during FY93:

(1) Maintain and expand efforts of the State Entomologist Office and the Gypsy Moth Technical Committee - utilize talents of various governmental and non governmental organizations to minimize the increase in Gypsy Moth population in the State. Coordinate annual Gypsy Moth trapping, eradication and education programs during

1993.(State Entomologist Section, Department of Agriculture and Land Stewardship)

(2) Revitalize the efforts to establish a viable Iowa Forest and Shade Tree Health Task Force - to better coordinate forest health problems and needs. This group will finalize a 5 year Iowa Forest and Shade Tree Health Action Plan. This group will draft a forest health reference handbook of existing publications and hold training sessions for Iowa woodland and urban tree professionals (Forestry Division/ Department of Natural Resources and Iowa State University).

(3) Encourage the attendance of professional and non-professional forestry/arboricultural people to the Iowa Shade Tree Short Course on March 9-10, 1993 to increase forest and shade tree health knowledge. (ISU Extension).

(4) Continue annual training programs for Forestry Division personnel and forestry consultants on forest and shade tree health problems. Efforts will involve monitoring and management efforts (Plant Health Care) (Forestry Division, Department of Natural Resources, USDA Forest Service and ISU Extension).

(5) Complete the annual Iowa aerial sketch forest pest mapping and necessary ground checks of state and private woodland resources during late September, 1993. Compare to past results utilizing Geographic Information Systems (GIS) mapping on selected state forest and park areas. (Forestry Division, Department of Natural Resources).

(6) Coordinate Iowa district and area foresters and forestry consultants to complete two visual forest pest reports on July 1, and September 1, 1993. (Forestry Division, Department of Natural Resources).

(7) Coordinate with 20 community forestry and arborists professionals to complete a single urban forest pest report by August 25, 1993 (Forestry Division, Department of Natural Resources & Iowa Arborist Association).

(8) Coordinate with 25 selected Iowa Christmas tree growers a single Christmas tree plantation pest report by August 1, 1993 and publish results in ICTGA news letter. In addition, distribute information on Common Shoot Beetle and other potential pest problems.(Forestry Division,

Department of Natural Resources, Horticulture Section, Department of Agriculture and Land Stewardship and the Iowa Christmas Tree Growers Association.

(9) Research the costs and effectiveness of Oak Wilt and Pine Decline silvicultural management on public and private woodlands in cooperation with the Task Force (Forestry Division, Department of Natural Resources and USDA Forest Service - NA).

(10) Complete Marshalltown Urban Forest Health Monitoring efforts with videographic and other survey means. Evaluate costs and present documentation to Marshalltown City Officials and the Iowa State Forester. (USDA Forest Service - NA and the Forestry Division, Department of Natural Resources)

(11) Complete 1993 Forest Health Report for Iowa by October 30, 1992 (Forestry Division).